

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.-8. (Cancelled).

9. (Currently amended) A method to diagnose potential discrepancies in electrical operating characteristics in a three phase electric motor comprising the steps of:

determining first currents ~~current~~ in each two phases of the electric motor ~~phase~~ with a first set of current sensors;

~~estimating a first current in a third phase of the electric motor~~ system;

~~generating~~ ~~determining~~ a first estimate value of motor shaft position;

~~generating~~ ~~estimating~~ a first estimate value of motor torque using the ~~first system to determine current~~ first currents in each the two motor ~~phase~~ phases and the first estimate value of motor shaft position;

determining ~~current of each~~ second currents in the two motor ~~phase~~ phases with a second ~~system~~ set of current sensors;

~~estimating a second current in the third phase of the electric motor~~ ;

~~generating~~ ~~determining~~ a second estimate value of motor shaft position;

~~generating~~ ~~estimating~~ a second estimate value of motor torque using the ~~second system to determine current~~ second currents in each motor phase and the second estimate value of motor shaft position; and

comparing the first and second estimates of motor torque.

10. (Original) The method according to claim 9, further comprising the step of notifying a motor operator of a potential discrepancy in electrical operating characteristics.

11. (Currently amended) The method according to claim 9, wherein the step of ~~determining~~ estimating a first current of each motor phase with the first system in a third phase of the electric motor comprises:

~~generating~~ determining a first measured current ~~of in~~ a first phase of the electric motor with a first current sensor;

~~generating~~ determining a first measured current ~~of in~~ a second phase of the electric motor with a second current sensor; and

~~generating a first estimated current of current in a~~ estimating a first current in the third phase of the electric motor based on the first measured current of currents in the first and second phases of the motor phase and the first measured current of the second phase.

12. (Currently amended) The method according to claim 9, wherein the step of generating the ~~estimate~~ first value of motor shaft position is accomplished by using a ~~first~~ Kalman filter.

13. (Currently amended) The method according to claim 9, wherein the step of ~~determining~~ estimating a second current in each the third motor phase ~~with the second system~~ comprises:

~~generating~~ determining a second measured current ~~of in~~ a first phase of the electric motor with a third current sensor;

~~generating~~ determining a second measured current ~~of in~~ a second phase of the electric motor with a fourth current sensor; and

~~generating~~ estimating a second ~~estimated current of current of in~~ a third phase of the electric motor based on the second measured ~~current of currents in the first phase and the second measured current of the second phase~~ and second phases of the motor.

14.-15. (Cancelled).

16. (Currently amended) The method according to claim 9, wherein the step of ~~generating~~ determining a second ~~estimate~~ value of motor shaft position is accomplished by using a resolver.

17. (Currently amended) A system for diagnosing potential discrepancies in electrical operating characteristics in a three phase electric motor comprising:

a controller; and

a control system embodied within the controller for directing the controller to control the steps of determining ~~current~~ first currents in each motor phase with ~~a first system~~ first set of current sensors, ~~generating~~ determining a first ~~estimate~~ value of motor shaft position, ~~generating~~ estimating a first ~~estimate~~ value of motor torque using the first ~~system to~~ determine ~~current~~ currents in each motor phase and the first ~~estimate~~ value of motor shaft position, determining second currents ~~current~~ in each motor phase with a second ~~system~~ set of current sensors, ~~generating~~ determining a second ~~estimate~~ value of motor shaft position, ~~generating~~ estimating a second ~~estimate~~ value of motor torque using the second ~~system to determine current in each motor phase~~ currents in each motor phase and the second ~~estimate~~ value of motor shaft position, comparing the first and second estimates of motor torque for discrepancies, and notifying ~~a motorist~~ an operator of a potential discrepancy in electrical operating characteristics.

18. (Currently amended) An automotive vehicle comprising:

a three phase electric motor;

a controller; and

a control system embodied within the controller for directing the controller to control the steps of determining ~~current~~ first currents in each motor phase with ~~a first system~~ first set of current sensors, ~~generating~~ determining a first ~~estimate~~ value of motor shaft position, ~~generating~~ estimating a first ~~estimate~~ value of motor torque using the first ~~system to~~ determine ~~current~~ currents in each motor phase and the first ~~estimate~~ value of motor shaft position, determining second currents ~~current~~ in each motor phase with a second ~~system~~ set of current sensors, ~~generating~~ determining a second ~~estimate~~ value of motor shaft position,

~~generating a second estimate~~ estimating a second value of motor torque using the second system to ~~determine current in each motor phase~~ currents in each motor phase and the second ~~estimate~~ value of motor shaft position, comparing the first and second estimates of motor torque for discrepancies, and notifying a ~~motorist~~ an operator of a potential discrepancy in electrical operating characteristics.